Meeting of SREP Pilot Countries
May 28-30, 2013 – Bandos Island, Maldives

Progress Updates from Countries without Endorsed Investment Plans

Country/regional pilot: Mongolia

Please describe any advances made in the following areas, arising from your SREP programming process since the last meeting of SREP pilots.	
Stakeholder engagement (e.g., CSOs, private sector, development partners)	Interview different stakeholders to develop an issue SREP program laying out a number of key themes that would be discussed in groups during workshop to be hold on middle of August, 2013
Institutional arrangements and government coordination	Government coordination – Ministry of Energy and Ministry of Finance, Mongolia
Analytical work and technical studies	Learning process SREP program

Please describe any challenges encountered in the following areas, arising from your SREP programming process since the last meeting of SREP pilots.	
Political issues	No any challenges
Stakeholder engagement (e.g., CSOs, private sector, development partners)	No any challenges
Institutional arrangements and government coordination	No any challenges
Stakeholder capacity (e.g., government, private sector, CSOs)	No any challenges

Please provide any additional information you wish to share on impacts or lessons learned from the SREP programming process.
To reduce air pollution, fight desertification by using renewable energy technology, and scale-up renewable energy sources • To do a research by using solar hot water system in urban areas for supply hot water and heating. • Installation of Photovoltaic Power System at Taishir Hydropower Plant site to work as a hybrid system. Main objective of this project is to construct 10MW solar power plant on previously installed 11MW Hydro Power Plant site of Taishir which provides electricity in Altai town, Taishir, Khaliun, Jargalan soum of Gobi-Altai province and it can perfectly work as a hybrid system. • Solar and ground source heat technology utilization for heating of province's and district's centres in Mongolia. • To distribute 200-300W portable Solar Home System for nomadic herders. • To establish First Mongolian Solar Thermal Power Plant with capacity of 20 MW in Gobi Desert. • To create Solar resource assessment network or Solar Atlas.

Monitoring energy access:	
What indicators and monitoring systems are being used at the national or sector level to monitor energy access?	The Ministry of Energy has the department of monitoring, evaluation, and internal audit. This department is responsible to make monitoring, evaluation energy assess.
Would these existing monitoring systems capture the impacts of SREP investments in energy access, and, if yes, how?	No

What is your government's experience working with social enterprises for delivery of energy access in rural areas?

The energy sector of Mongolia is the essential part of the national economy and other sectors activities are very much dependent on this sector.

Mongolia's energy system is comprised of Central (CES), West (WES), East (EES) and Altai-Uliastai (AUES) autonomous energy systems, Dalanzadgad steam power plant and diesel generators with provisional operations installed at small settlements. Energy lack during the peak load in the Central Energy System and almost all energy demand in the Western zone of the country is supplied by the imported energy from Russia. Recently more than 90% of territory and 95% of the population are reliably supplied with energy. There are seven 6 – 560MW coal-fired power stations, thirteen 0.15-12MW hydro-power stations, small size solar, wind and diesel generators operating in Mongolia which connected to the 1,044km long of 220kV, 4,240km long of 110kV, 6,921km long of 35kV, 2,112km long of 15kV, 9,639km long of 6-10kV and 7,942km long of 0.22-0.4kV power transmission lines through 3,675 substations of 6kW to 220kW capacity.

Invested from the National Budget, since 1996 more than 200 soums or settlements have been connected to the centralized power supply system, some small villages were connected to small size hydro-power stations and some were supplied with solar and wind power generators, more than 100,000 nomadic families were supplied with solar home systems. Nowadays, 302 of total 331 soums are connected to the centralized power supply system, renewable energy facilities are installed in 13 soums, and power transmission lines are being installed to connect 3 soums with the centralized power supply system.
About 92.67% of power consumed are produced by power stations, 0.42% by diesel generators, 1.1% by hydro-stations, 0.01% by renewable facilities, and 5.8% are imported. Increase in power demand in the Central zone is supplied by the national producers.

The Government encourages the sustainable development strategy goals to improve structure of energy assess and reform brown economy to green economy by developing renewable energy which has less impact on environment.

What activities undertaken in your country have been successful at scaling up renewable energy access in rural areas?

100,000 Solar Houses (Gers) - National Programme for Providing Rural Areas with Electricity through the Utilization of Renewable Energy (2000-2012).

The main goals of the programme were:

- Electrification of all households in rural areas through Solar Home Systems (SHS).
- Development of Solar-Wind-Hydro-Diesel power hybrid system to meet electricity demand of livestock herdsmen's households, villages, rural schools, hospitals, tourist camps, frontier posts, etc.

The SHS were subsidised through contributions from various bilateral donors over the course of its lifetime (2000-2012). More than 30000 subsidised SHS were sold to herder families by 2004. Over 40000 SHS were distributed to herder families financed by the Mongolian National Budget in 2006-2007. After the inclusion of the World Bank in 2006, 27000 more subsidised SHS were sold. The programme has also improved electricity distribution systems in 30 soums (districts), and installed hybrid systems to reduce the use of costly diesel in 15 soums. It has increased the electrification rate among nomadic herders from zero to 70%.

What activities undertaken in your country have not been successful at scaling up renewable energy access in rural areas?

In 2007, Government of Mongolia decided to expand the transmission and distribution grids. Some Soum centers have not connected to the main grid.

The Ministry of Fuel & Energy implemented several stand-alone hybrid renewable energy power plants for supplying electricity to Soum centers financed by the Mongolian National Budget and Mongolia's Development Fund in 2007-2008. The renewable energy systems have been installed in the following Soum centers:

- Tseel Soum of Gobi-Altai Aimag, 150 kW Solar-Wind hybrid system
- Manlai Soum of Umnugobi Aimag, 150 kW Solar-Wind hybrid system
- Shinejinst Soum of Bayankhongor Aimag, 150 kW Solar-Wind hybrid system
- Bayan-Undur Soum of Bayankhongor Aimag, 150 kW Solar-Wind hybrid system
- Bayantsagaan Soum of Bayankhongor Aimag, 150 kW Solar-Wind hybrid system
- Matad Soum of Dornod Aimag, 120 kW Solar-Wind hybrid system
- Tsetseg Soum of Khovd Aimag, 30 kW, 70kW Solar system
- Bugat Soum of Gobi-Altai Aimag, 60 kW, 100 kW Solar system
- Khatanbulag Soum of Dornogobi Aimag, 150 kW Wind system
- Mandakh Soum of Dornogobi Aimag, 80 kW Wind system
- Sevtei Soum of Umnugobi Aimag, 70 kW Wind system
- Bogd Soum of Uvurkhangai Aimag, 80 kW Wind system

These renewable energy systems generate electricity using wind and/or solar technologies and have brought significant reductions in operating costs compared to the previous power supply by means of diesel generators.

In September 2008, World Bank executed the performance evaluation on the system configuration, operation and condition of the hydrid power systems in eight Soums of Mongolia. Due to the continuing performance problems of the existing systems, the Ministry of Fuel & Energy requested a further investigation of the hybrid systems. GIZ under the project entitled "Utilization of Renewable Energy" has further investigated eight hybrid systems in March 2009. The Energy Authority made own evaluations on the each Soum and has presented Ministry of Mineral Resources and Energy for taking necessary measure for improvement.

Numerous problems have been occurred in relation to the system design, component selection, quality of the equipment, management and operation and maintenance. Those problems have been caused due to the lack of know-how (knowledge) in the system design and component selection, absence of awareness of energy efficiency, lack of use of international standards, inadequate supervision/examination of installation, commissioning and insufficient operator training.

Diesel engine generators have been used to supply electric power in each soum in the past. As a result of the installation of renewable energy system, fuel reduction has been achieved in not small way. As a general evaluation, the fuel reduction can be regarded as a benefit of the installation of renewable energy systems. In some soums, renewable energy systems can supply the demand in a day in good weather condition. Depending on the future operation and the system improvement, the renewable systems and the system improvement, the renewable energy systems can be expected to spread as a typical stable system model. However, there are still a lot of problems to be solved. The main problems that must be solved in order to spread the renewable energy system were found. (i) hybrid systems installed in the soums are not functional as an ideal system configuration; (ii) quality of the component: quality and performance of system components are generally poor, and some systems are found to have malfunctions and failures frequently; (iii) operation and management: since lifetime of the batteries considerably depend on the operation and maintenance, the operation and maintenance must be determined very carefully; (iv) electricity quality: large voltage drops and low voltage of distribution lines are found in some soums.